

WORKING DRAFT
BDCP HCP/NCCP Biological Goals and Objectives

***Note:** This handout presents in-progress working draft of the biological goals and objectives as developed by the Biological Goals and Objectives Working Group through November 20, 2008. The Working Group anticipates subsequent refinements to better incorporate consideration for addressing viability attributes of the covered fish species and to incorporate goals and objectives for terrestrial covered species.*

Ecologically Hierarchical Organization of Biological Goals and Objectives

SAIC proposes to organize the biological goals and objectives hierarchically, on the basis of ecological scale, as follows:

1. Ecosystem Goals and Objectives
2. Natural Community Goals and Objectives
3. Species-Specific Goals and Objectives

The scope of each ecological scale is as follows:

- **Ecosystem Goals and Objectives.** Ecosystem goals and objectives are focused on improvements to the overall condition of hydrological, physical, chemical, and biological processes in the Delta in support of achieving goals and objectives for covered natural communities and covered species.
- **Natural Community Goals and Objectives.** Natural community goals and objectives are focused on maintaining or enhancing ecological functions and values of covered natural communities. Achieving natural community goals and objectives also serve to conserve the habitat of associated covered species and other native species.
- **Species-Specific Goals and Objectives.** Species-specific goals and objectives are focused on reducing the effects of certain stressors on covered species to increase their production, abundance, and distribution. ***Please note that there are numerous goals and objectives that will benefit covered species but which are placed into the “higher” categories of ecosystem or natural community goals and objectives. Species level biological goals and objectives are only established for the ecological, life history, and habitat requirements of each of the covered species that are not provided for in ecosystem- and natural community-level goals and objectives.***

Ecosystem Goals and Objectives

Goal ECSY 1: Provide hydrodynamic conditions within Delta waterways that contribute to viable populations of covered fish species.

Objective ECSY1.1: Provide hydrodynamic conditions that support the movement of larval and juvenile life stages of covered fish species to downstream rearing habitats.

[Note: conservation measures that contribute towards achieving this objective will include quantitative metric values to be developed by the Conveyance Working Group.]

Objective ECSY1.2: Provide hydrodynamic conditions that support the movement of adult life stages of covered fish species to upstream spawning habitats.

[Note: conservation measures that contribute towards achieving this objective will include quantitative metric values to be developed by the Conveyance Working Group.]

Objective ECSY1.3: Provide a range of salinity conditions that support habitat and food production for covered fish species.

[Note: conservation measures that contribute towards achieving this objective will include quantitative metric values to be developed by the Conveyance Working Group.]

Goal ECSY 2: Increase primary and secondary production to increase the abundance and availability of food for all life stages of covered fish species.

Objective ECSY2.1: Over the term of the BDCP, increase the abundance of zooplankton species that provide food and support food production for covered fish species in Delta waterways.

Goal ECSY 3: Reduce the adverse effects of non-native species on the Delta's aquatic ecosystem and the productivity, abundance, distribution of covered fish species.

Objective ECSY3.1: Manage the distribution and abundance of established non-native invasive species in the Delta to reduce non-native species predation on and competition with covered fish species.

Objective ECSY3.2: Manage the distribution and abundance of established non-native invasive species in the Delta to rehabilitate aquatic ecosystem processes.

Objective ECSY3.3: Minimize the likelihood for future invasions and establishment of non-native species into the Delta's aquatic ecosystem.

Goal ECSY 4: Reduce the adverse effects of contaminants on the Delta's aquatic ecosystem and the productivity, abundance, distribution of covered fish species.

Objective ECSY4.1: Contribute to managing the load of contaminants of concern that enter the Delta in wastewater treatment plant discharges to levels in conformance with existing and future water quality standards to reduce their effects on and biological uptake by covered fish species.

Objective ECSY4.2: Contribute to managing the load of contaminants of concern that enter the Delta from urban sources to levels in conformance with existing and future water quality standards to reduce their adverse effects on and biological uptake by covered fish species.

Objective ECSY4.3: Contribute to managing the load of methyl mercury entering the Delta from in-Delta and upstream sources to levels in conformance with existing and future water quality standards to reduce adverse effects of methyl mercury on and biological uptake by covered fish species.

Objective ECSY4.3 Contribute to managing the load of contaminants of concern entering the Delta from in-Delta and upstream sources from agricultural practices to reduce their adverse effects on and biological uptake by covered fish species.

Objective ECSY4.4: Coordinate efforts to detect and respond to toxic events in the Delta.

Goal ECSY5: Provide for the spatial distribution and connectivity of covered species habitats across the Delta to support the effective movement and genetic exchange of covered species within and among natural communities both inside and outside of the BDCP planning area.

Objective ECSY5.1: Provide the hydrodynamic and salinity and other water quality conditions within the Delta that support the effective movement of all life stages of covered fish species between spawning, larval, juvenile, and adult habitat areas.

[Note: conservation measures that contribute towards achieving this objective will include quantitative metric values to be developed by the Conveyance Working Group.]

Objective ECSY5.2: Contribute to the availability of well-distributed restored floodplain, riparian, tidal marsh, and shallow subtidal aquatic habitats to support increased distribution of covered species and improved connectivity among covered species habitats within and adjacent to the BDCP planning area.

Covered Natural Community Goals and Objectives

Goal NACO1: Protect, enhance, and restore tidal perennial aquatic, tidal freshwater emergent, brackish freshwater emergent, floodplain, and valley riparian communities to provide habitat and ecosystem functions to increase the natural production (reproduction, growth, and survival), abundance, and distribution of covered species.

Objective NACO1.1: Increase the frequency that floodplain habitat within the Yolo Bypass is inundated for at least 45 consecutive days to approximately [redacted] percent of years based on current hydrology.

Objective NACO1.2: Provide for the inundation of at least [redacted] acres of historical floodplain surfaces that have been disconnected from river channels to provide habitat and ecosystem functions that support of covered species.

Objective NACO1.3: Restore, manage, and protect at least [redacted] acres of freshwater tidal marsh in the Delta that provides habitat and ecosystem functions in support of covered species.

Objective NACO1.4: Restore, manage, and protect [redacted] acres of brackish tidal marsh in Suisun Marsh/Bay to provide habitat and ecosystem functions in support of covered species.

Objective NACO1.6: Restore at least [redacted] acres of riparian forest and scrub within the Delta to provide habitat and ecological functions in support of covered species.

Covered Species Goals and Objectives

General Covered Fish Species

Goal GECF1: Increase the abundance of covered fish species by reducing sources of unnatural mortality.

Objective GECF1.1: Reduce entrainment of covered fish species at non-project diversions.

Objective GECF1.2: Reduce entrainment of covered fish species at the Banks Pumping Plant and the Jones Pumping Plant.

Objective GECF1.3: Reduce entrainment of covered fish species into the SWP and CVP north Delta diversion intakes in the BDCP long-term implementation period.

Objective GECF1.4: Contribute towards reducing the risk for dissolved oxygen sags in Delta and Suisun Marsh waterways that could result in mortality of covered fish species.

Objective GECF1.5: Minimize the adverse effects of harvest on covered fish species.

Goal GECF2: Improve the genetic fitness and integrity of covered fish species.

GECF2.1: Improve the fitness of wild populations of Chinook salmon and steelhead by managing salmonid hatcheries to minimize their adverse effects on wild populations.

GECF2.2: Reduce the risk for the extinction of delta smelt and the extirpation of longfin smelt by maintaining and expanding existing artificial propagation programs for preserving the genetic diversity of delta smelt and longfin smelt populations and contributing to their abundance and distribution within the planning area.

Delta Smelt

Goal DESM1: Increase the production (reproduction, growth, survival), abundance, and distribution of delta smelt in the Delta and Suisun Bay.

Objective DESM1.1: Provide for the distribution of delta smelt within the Delta as indicated by the FMWT abundance indices values shown in Table 1 (to come) in the BDCP near-term implementation period.

Objective DESM1.2: Provide for the distribution of delta smelt within the Delta as indicated by the FMWT abundance indices values shown in Table 2 (to come) in the BDCP long-term implementation period.

Longfin Smelt

Goal LOSM1: Improve the production (reproduction, growth, survival), abundance, and distribution longfin smelt in the Delta and Suisun Bay.

Objective LOSM1.1: Provide for the distribution of longfin smelt within the Delta as indicated by the FMWT abundance indices values shown in Table 1 (to come) in the BDCP near-term implementation period.

Objective LOSM1.2: Provide for the distribution of longfin smelt within the Delta as indicated by the FMWT abundance indices values shown in Table 2 (to come) in the BDCP long-term implementation period.

Chinook Salmon

Goal CHIN1: Improve the survival of juvenile Chinook salmon passing through the Delta.

Objective CHIN1.1: Increase the survival of juvenile Sacramento Basin spring-run Chinook salmon passing Chipps Island in the BDCP near-term implementation period by [] percent, fall/late fall-run Chinook salmon by [] percent, and winter-run Chinook salmon by [] percent from mean survival rates observed from [year] to [year].

Objective CHIN1.2: Increase the survival of juvenile Sacramento Basin spring-run Chinook salmon passing Chipps Island in the BDCP long-term implementation period by [] percent, fall/late fall-run Chinook salmon by [] percent, and winter-run Chinook salmon by [] percent from mean survival rates observed from [year] to [year].

Objective CHIN1.3: Increase the survival of juvenile San Joaquin Basin fall-run Chinook salmon passing Chipps Island in the BDCP near-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Objective CHIN1.4: Increase the survival of juvenile San Joaquin Basin fall-run Chinook salmon passing Chipps Island in the BDCP long-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Objective CHIN1.5: Should a spawning population of spring-run Chinook salmon established in the San Joaquin River, provide for survival of San Joaquin Basin spring-run Chinook salmon passing Chips Island in the BDCP long-term implementation period of at least [] percent.

Goal CHIN2: Increase the growth and fitness of juvenile Chinook salmon that pass through and rear in the Delta to increase the likelihood for survival of juvenile Chinook salmon in San Francisco Bay and ocean habitats.

Objective CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon passing Chipps Island.

Objective CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon passing Chipps Island.

Goal CHIN3: Increase the successful migration of all runs of adult Chinook salmon that migrate upstream through the Delta.

Objective CHIN3.1: Increase the passage of all runs of Sacramento Basin adult Chinook salmon past the Fremont Weir into the Sacramento River by [] percent from the passage efficiency provided by the existing Fremont Weir fish ladder.

Objective CHIN3.2: Increase the passage of all runs of San Joaquin Basin adult Chinook salmon past the Stockton Deep Water Ship Channel by contributing towards maintaining dissolved oxygen levels of at least 5 ppm within the Stockton Deep Water Ship Channel during periods Chinook salmon are present.

Central Valley Steelhead

Goal STEE1: Improve the survival of juvenile steelhead passing through the Delta.

Objective STEE1.1: Increase the survival of juvenile Sacramento Basin steelhead passing Chipps Island in the BDCP near-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Objective STEE1.2: Increase the survival of juvenile Sacramento Basin steelhead passing Chipps Island in the BDCP long-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Objective STEE1.3: Increase the survival of juvenile San Joaquin Basin steelhead passing Chipps Island in the BDCP near-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Objective STEE1.4: Increase the survival of juvenile San Joaquin Basin steelhead passing Chipps Island in the BDCP long-term implementation period by [] percent from mean survival rates observed from [year] to [year].

Goal STEE2: Increase the growth and fitness of juvenile steelhead that pass through and rear in the Delta to increase the likelihood for survival of juvenile steelhead in San Francisco Bay and ocean habitats.

Objective STEE2.1: Increase the mean weight and length of juvenile Sacramento Basin steelhead passing Chipps Island.

Objective STEE2.2: Increase the mean weight and length of juvenile San Joaquin Basin steelhead passing Chipps Island.

Goal STEE3: Increase the successful migration of adult steelhead that successfully migrate upstream through the Delta.

Objective STEE3.1: Increase the passage of San Joaquin River adult steelhead past the Stockton Deep Water Ship Channel by contributing towards maintaining dissolved oxygen levels of at least 5 ppm within the Stockton Deep Water Ship Channel during periods steelhead are present. .

Sacramento Splittail

Goal SASP1: Contribute to a viable population of Sacramento splittail in the Delta.

Objective SASP1.1: Over the term of the BDCP, during any five consecutive years, increase the average productivity of Sacramento splittail in the Delta by [] from the mean production of Sacramento splittail observed from [year] to [year].

Objective SASP1.2: Maintain multiple cohorts of Sacramento splittail as part of the breeding population.

Green Sturgeon

Goal GRST1: Increase upstream passage of adult green sturgeon through the Delta.

Objective GRST1.1: Increase the passage of adult green sturgeon past Fremont Weir into the Sacramento River by [] percent from the passage efficiency provided by the existing Fremont Weir fish ladder and to reduce green sturgeon loss to stranding.

White Sturgeon

Goal WHST1: Increase upstream passage of adult white sturgeon through the Delta.

Objective WHST1.1: Increase the passage of adult white sturgeon past Fremont Weir into the Sacramento River by [] percent from the passage efficiency provided by the existing Fremont Weir fish ladder and to reduce white sturgeon loss to stranding.

Terrestrial Covered Species

[To come.]